

WHAT IS CLAIMED IS:

1. An apparatus for facilitating securement of a vascular graft within a blood vessel, which comprises:

5 a shaft dimensioned for passage within a blood vessel and having an expansion member, said expansion member movable between a contracted condition and an expanded condition; and

10 a fastener array comprising at least one fastener disposed about a peripheral portion of said expansion member, said one fastener being deployable into a wall of said blood vessel upon movement of said expansion member to said expanded condition thereof, to thereby engage the vascular graft to secure the vascular graft to a wall of the blood vessel.

2. The apparatus according to claim 1 wherein the fastener array includes a plurality of fasteners.

15 3. The apparatus according to claim 2 wherein the fasteners of the fastener array are operatively connected to each other.

20 4. The apparatus according to claim 2 wherein said fasteners of said fastener array are releasably secured to said peripheral portion of said expansion member.

5. The apparatus according to claim 4 wherein the fasteners are releasably adhered to said peripheral portion of said expansion member with an adhesive.

25 6. The apparatus according to claim 2 wherein said fastener array defines a substantially annular arrangement whereby said fasteners are arranged about a periphery of said expansion member.

7. The apparatus according to claim 1 wherein said fasteners of said fastener array are connected to a biocompatible member, said biocompatible member being mounted about said peripheral portion of said expansion member.

5 8. The apparatus according to claim 7 wherein the biocompatible member is a biocompatible tape.

9. The apparatus according to claim 2 wherein adjacent fasteners of said fastener array are arranged in overlapping relation.

10 10. The apparatus according to claim 9 wherein each said fastener of said fastener array is a surgical staple having a base and penetrating legs extending from opposed ends of said base.

15 11. The apparatus according to claim 10 wherein said legs of each said staple define a length sufficient to penetrate through the vascular graft and lodge within the wall of the blood vessel without penetrating completely through the wall of the blood vessel.

20 12. The apparatus according to claim 1 wherein said expansion member is an inflatable balloon member.

13. The apparatus according to claim 12 further including inflation means for inflating said balloon member to move said balloon member to said expanded condition.

25 14. The apparatus according claim 1 wherein said expansion member includes a stent.

15. An apparatus for facilitating securement of a vascular graft within a blood vessel, which comprises:

an elongated shaft having proximal and distal ends, and defining a longitudinal axis, said elongated shaft being dimensioned for passage within a blood vessel;

an expansion member supported at said distal end of said elongated shaft, said expansion member adapted to expand from a substantially contracted condition to a substantially expanded condition; and

a surgical staple array including a plurality of surgical staples arranged about a peripheral portion of said expansion member, at least first and second adjacent surgical staples being arranged in partial overlapping relation, said staples of said staple array being deployable into a wall of a blood vessel upon expansion of said expansion member to said expanded condition thereof;

wherein, when said expansion member and said surgical clip array are positioned within a substantially tubular graft disposed within the blood vessel, said expansion member is expanded to said expanded condition to deploy said surgical clips thereby causing engagement of said surgical clips with the vascular graft and the blood vessel to secure the vascular graft within the blood vessel.

16. The apparatus according to claim 15 wherein said surgical staples of said staple array are arranged to define an annular configuration.

17. The apparatus according to claim 16 wherein adjacent staples of said staple array are disposed in at least partial overlapping relation.

18. A method for securing a vascular graft within a blood vessel, comprising the steps of:

accessing a blood vessel;
positioning a vascular graft at a predetermined location within the blood vessel;
introducing a fastener array within the blood vessel and moving said fastener array within the blood vessel to a position at least partially disposed within the vascular graft, said fastener array including a plurality of surgical fasteners arranged about a longitudinal axis of

said fastener array, said surgical fasteners having penetrating portions dimensioned to penetrate the vascular graft; and

5 deploying said surgical fasteners of said fastener array radially outwardly relative to said longitudinal axis whereby said penetrating portions of said surgical fasteners penetrate the vascular graft and engage a wall of the blood vessel without completely penetrating through the wall of the blood vessel, to thereby secure the vascular graft to the blood vessel wall.

10 19. The method according to claim 18 wherein the vascular graft is a substantially tubular vascular graft defining an outer peripheral graft wall.

15 20. The method according to claim 19 wherein said surgical fasteners of said fastener array are arranged with respect to each other to define a substantially annular configuration whereby, upon said step of deploying, said surgical fasteners secure the substantially tubular graft to the blood vessel substantially along the outer peripheral graft wall.

20 21. The method according to claim 19 including a catheter having a catheter shaft, said fasteners of said fastener array being supported adjacent a distal end of said catheter, and wherein said step of introducing includes advancing said catheter within the blood vessel wall to position said fastener array at least partially within the vascular graft.

25 22. The method according to claim 21 wherein said catheter includes an expansion member disposed adjacent said distal end of said catheter shaft, said surgical fasteners arranged about a peripheral surface of said expansion member and wherein said step of deploying includes expanding said expansion member to cause said surgical fastener to move radially outwardly into engagement with the vascular graft and the wall of the blood vessel.